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CURRENT LITERATURE.

BOOK REVIEWS.

The origin of species and varieties by mutation.

PROFESSOR DEVRIES[1] has hit upon a method for presenting his experiments and theories to the English-reading public that is as happy as it is unique. It is commonly the fate of an epoch-making work, such as *Die Mutationstheorie* has proved itself to be, to undergo a translation into other tongues in the course of three or four years, without alteration except for some inevitable changes for the worse. DeVries has taken into his own hands the preparation of the English exposition of mutation, and we have as a result a book that is written for a very different audience, couched in different language, and prepared in the light of the experiments and discussions of the past four years. The investigator who desires the minutiae of DEVRIES' experimental results will still have recourse for the most part to the earlier volumes, but as investigators are supposed to be conversant with the German language and with the technical terminology there employed, no difficulty results. The investigator, however, will require the present volume for the broader viewpoint, and for the contributions that have appeared since 1901. The great and undisputed field for the present volume is the presentation of mutation to the large and important audience of intelligent people to whom German is a foreign language, and technical terminology more so.

The volume under consideration is based on a course of lectures given at the University of California in the summer of 1904, and was edited by D. T. MACDOUGAL of the New York Botanical Garden, whose experiments and contributions have done so much to make Americans conversant with the work of DEVRIES. One of the most valuable and interesting of his lectures is the preliminary one, dealing with theories of evolution and methods of investigation. Here there is an excellent portrayal of the relation that exists between his contributions and those of others; and it is at once clear that the work of DARWIN is not opposed but supplemented and strengthened; DARWIN'S comparative studies resulted in the accumulation of a vast array of material, while DEVRIES' work has systematized this material, and has given us an experimental basis for the belief in evolution. It is to be hoped that the perusal of this volume will put an end to the notion, so widely circulated in the newspapers, that DEVRIES is a destroyer of Darwinism.

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[1] DEVRIES, HUGO, Species and varieties; their origin by mutation. Edited by D. T. MACDOUGAL. 8vo., pp. xviii+847. Chicago: The Open Court Publishing Co., 1905.

The following lectures outline the characteristics of elementary species, both in nature and in cultivation, and it is shown that natural selection must play a large part in determining their survival. Varieties are shown to differ from elementary species in not possessing anything that is really new, and in originating commonly by the loss of some quality. Several chapters deal with the various kinds of varieties, retrograde, progressive, and ever-sporting; in the same connection the subject of atavism is elucidated, as well as latent characters, and vicinism or variation under the influence of pollination by neighboring individuals. The lectures on mutations deal not alone with Oenothera, but as well with the peloric toadflax, double flowers, and a great many wild and cultivated plants that are supposed to illustrate mutation. A lecture that will be read with great interest by paleontologists, as well as others, is the one that considers the periodicity of mutations, and the relation that mutation bears to the length of geological time. The final lectures present the topic of fluctuating variations, and perhaps it is here that Darwinians will find least comfort in the work of DEVRIES. The closing words of the book, quoted from ARTHUR HARRIS, will be recognized as most apt: "Natural selection may explain the survival of the fittest, but it cannot explain the arrival of the fittest."

In a review of *Die Mutationstheorie* (BOT. GAZ. **33**:236–239. 1902), it was felt to be too soon to express an opinion concerning the place which that work would occupy in the literature of evolution, although it was the reviewer's intuition that this place would be very high. Of the permanent value of that work, and of the work here under review, there is now no doubt at all. "The greatest contribution since DARWIN" is the universal testimony, and there is a feeling on all sides that the answers to many evolutionary questions are close at hand, and that through the application of experiment. To many of us the new volume brings more than did the old, because we have now seen the author face to face, and have perpetually in mind the modest, lovable man, as well as the renowned investigator.—H. C. COWLES.

MINOR NOTICES.

EMERSON[2] has published the results of experiments in the control of the rust and scab of apples. He finds that the rust of apples due to species of Gymnosporangium can be prevented by spraying with Bordeaux mixture if the first application is made when the gelatinous spore-containing projections first appear on the "cedar apples." This spraying should then be followed by a second spraying about ten days or two weeks after the first. He recommends also that the cedar apples be removed from cedar trees near orchards in the winter or early spring, and that where practicable cedar trees themselves should not be allowed to remain within one mile of apple orchards. The scab he found could be prevented by spraying twice with Bordeaux mixture, once just before the apple blossoms open and again just after the blossoms fall.—E. MEAD WILCOX.

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[2] EMERSON, R. A., Apple scab and cedar rust. Bull. Nebraska Exp. Sta. **88**: pp. 21. *figs. 9.* 1905.